

**INFORMATION STORAGE AND RETRIEVAL DEVICE USING
MACROMOLECULES AS STORAGE MEDIA**

5 ABSTRACT OF THE INVENTION

 A storage device for the storage and retrieval of
arbitrary sequences of binary information provides areal
densities exceeding terabytes per square centimeter (TB/cm^2)
and even petabytes per square centimeter (PB/cm^2) in a 3D
10 configuration. The information is encoded in long strands of
biological or non-biological molecules such as artificial DNA,
RNA or other synthetic molecules that form a macromolecule.
The strands are written in-situ and, in some cases synthesized
in-situ, transported to and from read and write stations and
15 memory locations on the device. The data is read out by
detecting individual bases or collection of bases directly
from the strand.